

**IN THE CLAIMS**

For the convenience of the Examiner, all pending claims of the Application are reproduced below regardless of whether or not an amendment has been made.

1. (Currently Amended) A method for automatic concatenation detection of synchronous optical network (SONET) channels, comprising:

receiving at a network element a SONET frame including a mandatory overhead and a plurality of channels for a bundled connection;

automatically determining a signal configuration of the channels within the bundled connection based on the mandatory overhead; ~~and~~

automatically provisioning the network element to cross-connect the channels within the bundled connection based on the signal configuration determined from the mandatory ~~overhead.~~ overhead;

determining a new signal configuration of the channels within the bundled connection based on the mandatory overhead; and

automatically reprovisioning the network element to cross-connect the channels in the bundled connection based on the new signal configuration.

2. (Original) The method of Claim 1, wherein the mandatory overhead comprises a line overhead.

3. (Original) The method of Claim 2, wherein the line overhead comprises a synchronous transport signal (STS) payload pointer including concatenation indicators, further comprising automatically determining the signal configuration of the channels in the bundled connection based on the concatenation indicators.

4. (Original) The method of Claim 1, wherein the channels comprise synchronous transport signal-level 1 (STS-1) channels.

5. (Original) The method of Claim 1, wherein the network element includes a switch with cross-connections provisioned in a switching table, further comprising automatically provisioning the network element to cross-connect the channels in the bundled connection by provisioning the switching table in the switch.

6. (Original) The method of Claim 1, further comprising:  
extracting the mandatory overhead from the SONET frame;  
forwarding the mandatory overhead to a management complex in the network element;

determining at the management complex a signal configuration of the channels in the bundled connection based on the mandatory overhead extracted from the SONET frame; and

provisioning a switch in the network element to cross-connect the channels in the bundled connection based on the signal configuration determined from the mandatory overhead.

7. (Cancelled)

8. (Currently Amended) The method of Claim ~~7~~ 1, further comprising determining the signal configuration is the new signal configuration in response to at least detecting the new signal configuration for a predetermined number of sampled SONET frames.

9. (Original) The method of Claim 8, wherein the number of sampled SONET frames comprises at least three.

10. (Original) The method of Claim 1, wherein the signal configuration comprises a plurality of connections in the bundled connection.

11. (Currently Amended) A system for automatic concatenation detection of synchronous optical network (SONET) channels, comprising:

logic encoded in media; ~~and~~

the logic operable upon execution to receive at a network element a SONET frame including a mandatory overhead and a plurality of channels for a bundled connection, to automatically determine a signal configuration of the channels in the bundled connection based on the mandatory overhead and to automatically provision the network element to cross-connect the channels in the bundled connection based on the signal configuration determined from the mandatory ~~overhead~~; overhead; and

the logic further operable to automatically determine a new signal configuration of the channels within the bundled connection based on the mandatory overhead and to automatically reprovision the network element to cross-connect the channels in the bundled connection based on the new signal configuration.

12. (Original) The system of Claim 11, wherein the mandatory overhead comprises a line overhead.

13. (Original) The system of Claim 12, wherein the line overhead comprises a synchronous transport signal (STS) payload pointer including concatenation indicators, the logic further operable to automatically determine the signal configuration of the channels in the bundled connection based on the concatenation indicators.

14. (Original) The system of Claim 11, wherein the channels comprise synchronous transport signal – level 1 (STS-1) channels.

15. (Original) The system of Claim 11, wherein the network element includes a switch with cross-connections provisioned in a switching table, the logic further operable to automatically provision the network element to cross-connect the channels in the bundled connection by provisioning the switching table in the switch.

16. (Original) The system of Claim 11, the logic further operable to extract the mandatory overhead from the SONET frame, to forward the mandatory overhead to a management complex in the network element, to determine at the management complex a signal configuration of the channels in the bundled connection based on the mandatory overhead extracted from the SONET frame and to provision a switch in the network element to cross-connect the channels in the bundled connection based on the signal configuration determined from the mandatory overhead.

17. (Cancelled)

18. (Currently Amended) The system of Claim 11 ~~17~~, the logic further operable to determine the signal configuration is a new signal configuration ~~and~~ in response to at least detecting the new signal configuration for a predetermined number of sampled SONET frames.

19. (Original) The system of Claim 18, wherein the number of sample SONET frames comprises at least three.

20. (Original) The system of Claim 11, wherein the signal configuration comprises a plurality of connections in the bundled connection.

21. (Currently Amended) A communications network, comprising:  
a plurality of synchronous optical network (SONET) elements interconnected by fiber optic links; and

each of the SONET elements operable ~~to: to automatically provision cross-connections for a group of associated channels based on line overhead information transmitted in the channels.~~

receive a SONET frame including a mandatory overhead and a plurality of channels for a bundled connection;

automatically determine a signal configuration of the channels within the bundled connection based on the mandatory overhead;

cross-connect the channels within the bundled connection based on the signal configuration determined from the mandatory overhead;

determine a new signal configuration of the channels within the bundled connection based on the mandatory overhead; and

cross-connect the channels in the bundled connection based on the new signal configuration.

22. (Original) A method for provisioning cross-connections in a synchronous optical network (SONET) network, comprising:

assigning a plurality of consecutive SONET synchronous transport signal (STS) channels to a customer without specifying a traffic mix of the channels;

automatically detecting based on a line overhead the traffic mix of the SONET STS channels at each network element along a transmission path in the SONET network; and

each network element automatically provisioning its own cross-connects for the SONET STS channels based on the traffic mix detected from the line overhead.

23. (Original) The method of Claim 22, wherein the traffic mix is detected based on synchronous transport signal (STS) payload pointer bytes of the line overhead.

24. (Original) The method of Claim 23, wherein the traffic mix is detected based on concatenation indicators in the STS payload pointer bytes.

25. (Cancelled)